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☆ THIS MONTH ☆

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WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

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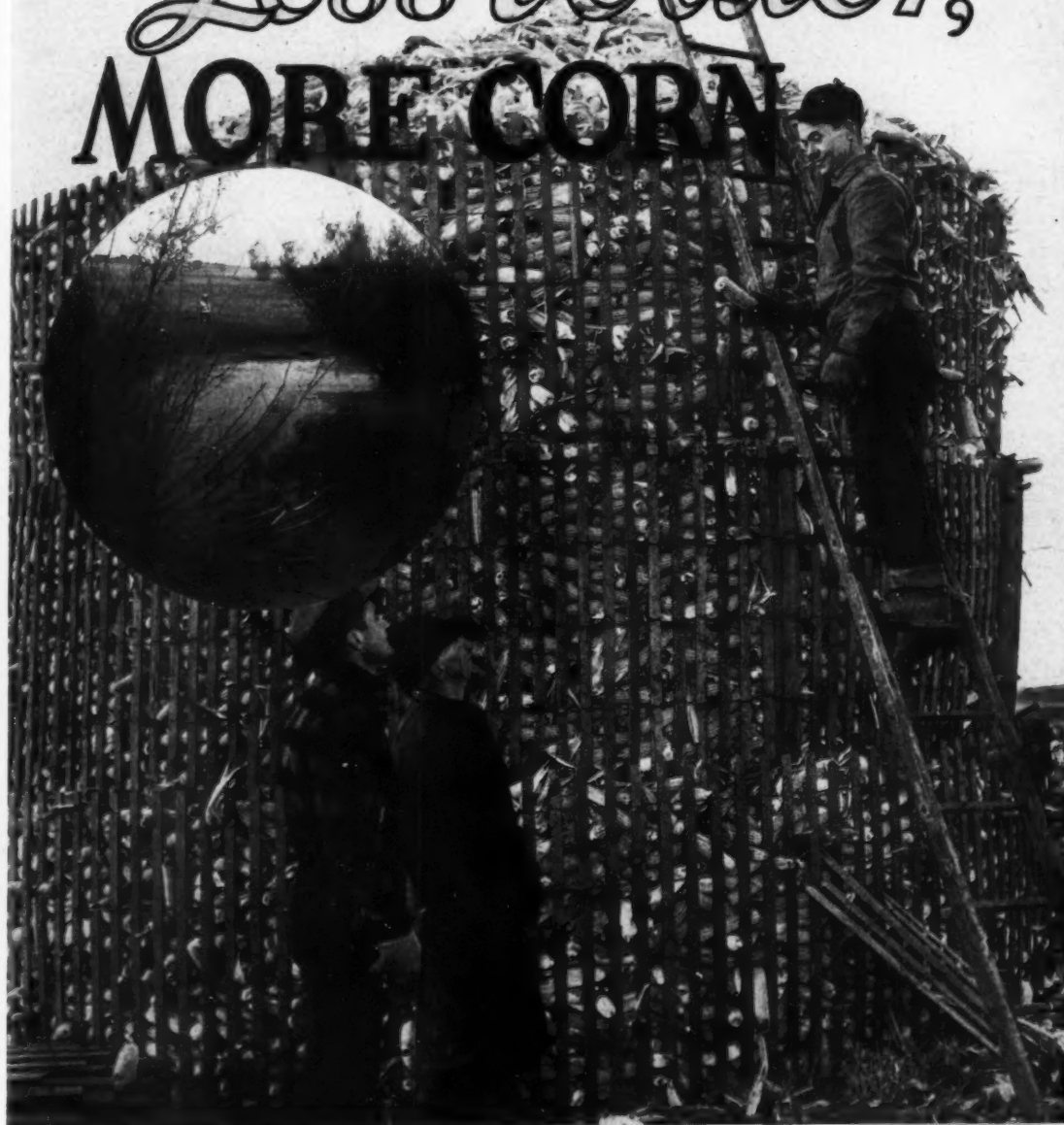
PRIORITY SYSTEM.—In an effort to obtain maximum efficiency from technicians, district equipment, and operators, the Onondaga County Soil Conservation District at Syracuse, N. Y., has worked out the following priority: (1) *Groups* of applicants who agree to establish complete conservation farm plans; (2) *individual* applicants who agree to establish complete conservation farm plans; (3) *groups* of applicants who agree to establish a majority of the practices recommended and will consider the establishment of complete conservation farm plans, and (4) *individuals* who agree to establish a majority of the practices recommended and will consider the establishment of complete conservation farm plans. District technicians and equipment work more effectively with groups than with scattered individuals. More can be accomplished by working with those who are willing to establish a complete soil conservation program.



FRONT COVER.—Plowing under sweet-clover in the blossom stage. Corn will be planted here. The land is terraced, and planting is on the contour. This "shot" was made by B. C. McLean in 1948 on the Floyd Dotson farm in the Bourbon County Soil Conservation District, Kans.

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Less Water, MORE CORN



First returns from drainage! Part of 80-bushels-per-acre yield from first field completed. Fred Spickler is on the ladder, Floyd Conger and Lyle Palmer on ground. The inset shows typical condition before problem was licked.



Hugh Neely checks work being done on his farm. This tiling machine (cost \$4,400) is owned and operated by farmer group. Neely is president.

By LYLE PALMER

A GROUP of enterprising farmers in the vicinity of Seward, Ill., in the Winnebago County Soil Conservation District watched the 1948 corn harvest with more than ordinary satisfaction. They are members of an association organized to promote drainage of hundreds of acres of marshy, unproductive land. Land which had made only poor pasture because of bog conditions, produced hundreds of bushels of corn.

NOTE.—The author is work unit conservationist, Rockford, Ill.

The project was started back in 1943 when a group of farmers headed by Hugh Neely decided that something ought to be done about the marshland they owned. A drainage system was the obvious answer, but there were so many different owners in this large area that one man could not do a successful job without the help of his neighbors.

Neely asked SCS technicians working in the Winnebago County Soil Conservation District to meet with 19 farmers in January 1944. They asked the district soil conservationist to make a survey to determine if drainage were possible and to estimate the cost of the job. The group met again a few weeks later and was informed that drainage was feasible on most of the farms.

Because some of the farms were not involved in the project and on others the cost ran too high, the group was pared down to 11 men who formed the Seward Mutual Drainage Association. Members worked up conservation programs for their farms with the soil conservation district, and technicians made a complete drainage plan.

The digging of the main ditch was done by the company which filed the lowest bid. SCS technicians did the staking and work began in June 1944. Two miles were completed that fall, and the spoil bank leveled, at a cost of over \$9,000.

The ditch was then ready to furnish an outlet for tile from the rest of the area. The plan called for tile from 4 to 12 inches in diameter. On a large acreage the tile lines are spaced at 80-foot intervals. According to Neely, the cost of this job, done by a private company, would have been at least \$2 a rod. This figure was regarded as too high. As a result, a tiling machine was purchased for \$4,400. With it the association members have been doing the work themselves for about 75 cents a rod. The ditcher, as the tiling machine is called, digs a trench about 1 foot wide and goes as deep as 5¾ feet. The depth the tile is laid depends upon the slope of the land and the fall contemplated.

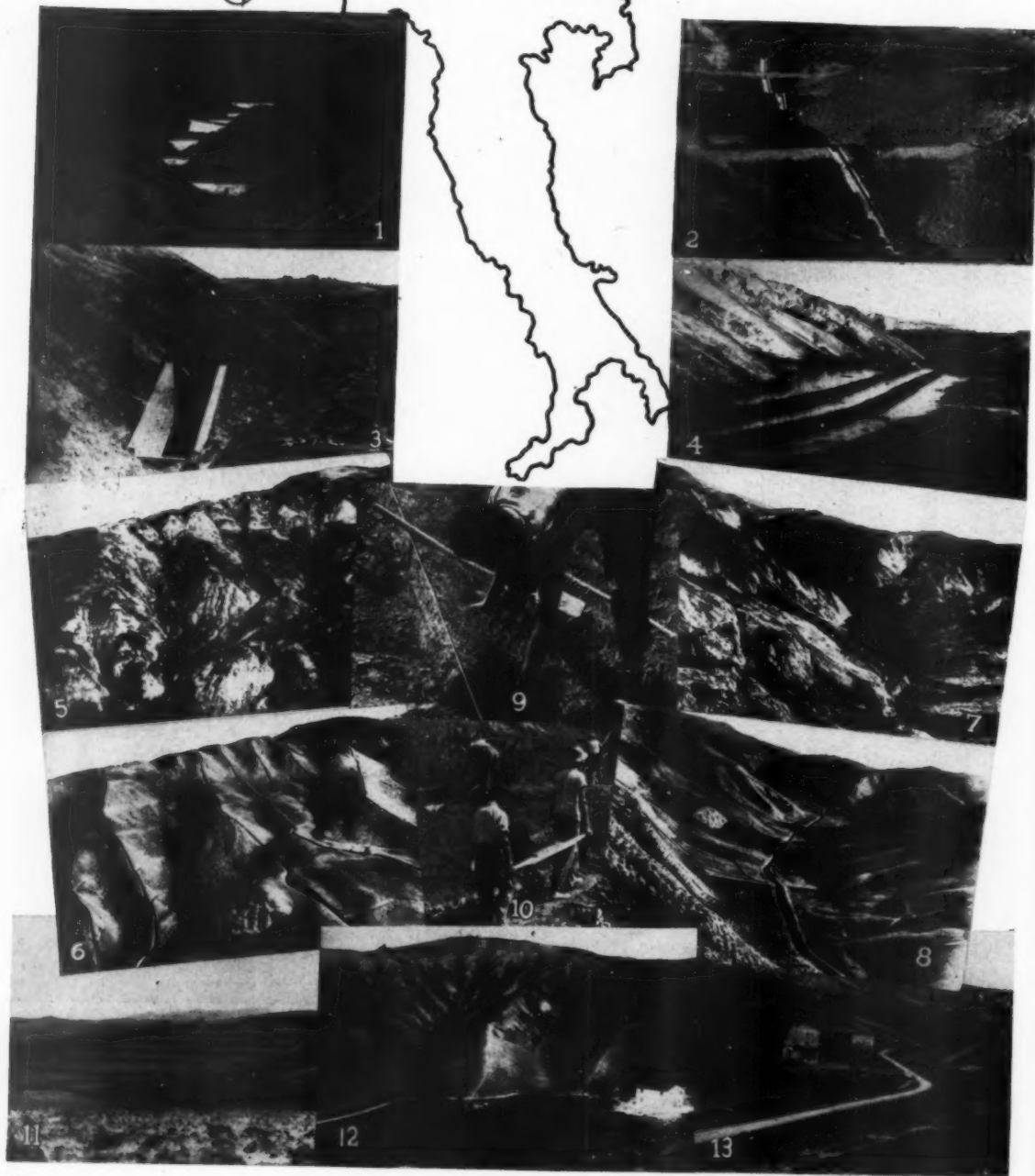
Tile drainage was completed first on the Minnie Conger farm in the fall of 1945. Then came a year of suspended activity, when it was impossible to get tile because of wartime shortages. Up to now, the association has made productive 97 acres of former wasteland. On this land the yield of corn ran better than 80 bushels per acre last year. At present 80,000 feet of tile have been laid. The planned total for the 11 farms—over 650 acres—is

(Continued on page 279)



Sound technique constitutes the difference between success and failure in meeting drainage problems. Here we see Palmer and A. A. Hardin preparing to survey and stake out the tile lines so that the tile will have the proper fall. Palmer, Glen D. Greek and Perry M. Wilcox, working with the Winnebago County Soil Conservation District, surveyed and staked the 80,000 feet of tile already installed.

Italy's Major Land Problem



EDITOR'S NOTE.—Augusto Alfani, who was graduated in Italy both in agronomy and in agricultural engineering, came some years ago to this country with a scholarship and took particular interest in the problems of soil conservation. On his return to Italy he did a great deal to publicize the achievements reached in this field in the United States and he has been called for the last 2 years to cooperate with the Food and Agricultural Organization in Rome.

In collaboration with the late Hugh G. Calkins, who also was an executive with FAO, he has written the article "Italy's Major Land Problem," which, because of its length, will be published in two sections. Part I appears this month. Part II will follow in the August issue.

This is an attempt by Mr. Alfani to work the other way round—to bring to America problems and achievements in the field of soil conservation in Italy.

1. View from upstream of a watershed unit of the Piaggia Torrent; the remodeling and control accomplished by the earth dams is evident. (Photo by Alfani.)

2. Same watershed as in 1, seen from downstream. Notice earth dams with tamarisk plantations and flume outlets of gravel covered with wire netting coated with cement. (Photo by Alfani.)

3. Masonry basin outlet built for an earth dam of the Brisighella Consortium. (Photo by Brisighella Mountain Basins Consortium.)

4. Siltations due to an earth dam. Water is already conveyed from an outlet to the one downstream by means of embankments. (Photo by Brisighella Mountain Basins Consortium.)

5 and 6. A zone of the Predappio Consortium (Forlì Province) before and after systemization practices have been supplied. Such practices are according to principles outlined for the Emilia Region. (Photos by Predappio Mountain Basins Consortium.)

7 and 8. Another zone of the Predappio Consortium, before and after systemization. (Photos by Predappio Mountain Basins Consortium.)

9. Sod is placed with accuracy where it is to grow. (Photo by Alfani.)

10. Sodding for control of earth dam with overflow crest in Val d' Era. (Photo by Alfani.)

11. Grassed benches on the contour, gently sloping (2.5 percent) toward the waterways, efficiently used at Spedalletto in Val d' Era.

12 and 13. Farm roads and farm buildings are indispensable for the application of a type of hydraulic reclamation, systemizations, and farm improvement. (Photos by Brisighella Mountain Basins Consortium.)

AGRICULTURAL Italy has a little more area and a somewhat larger population than industrial Great Britain. It is not so large as California—its climatic counterpart in North America—but has three or four times as many people. Lacking many of the raw materials required for industry, the Nation must continue to rely largely on agriculture for its existence. In the last 100 years the population has doubled. With 46 million people, and increasing at an accelerated rate, a way must be found to provide bread and work for these people and to place a solid foundation under a reborn structure of democracy. Italy's African colonies, already supporting indigenous populations and containing vast areas of desert, did not furnish the complete solution, nor, with many other countries in similar predicaments, can the answer be fully found in emigration.

Whatever other measures be undertaken, it is an inescapable fact that Italy's resources of soil, water, and forest—sadly depleted by centuries of heavy use—must be husbanded with the utmost care if the Nation is to survive. Her government, her scientists, and her farmers must strive valiantly together to make every acre, on a long-term sustained basis, produce the maximum of which it is capable.

Italy has a variegated climate and a wide range of soils. It has a few large and many small valleys which are highly productive, particularly where the necessary irrigation and drainage have been provided. But the pressure of population has been such that agriculture has invaded the hills and mountains that were once clothed with forests. Extensive areas had an underlying formation of clay, or of soft rock that weathers into clay. As the forests were destroyed and the remaining vegetation was removed by grazing and cultivation, the sandy, humus-bearing soil covering the slopes was gradually removed, exposing highly erodible clay surfaces. The landscape was cut into deep gullies and knife-like ridges. Huge quantities of soil were washed out, destroying farms, choking stream channels, and transforming fertile river deltas into swamps and lagoons. It is quite true, of course, that these clay soils constitute only a part of Italy's conservation problem, but they are of such outstanding importance that their story and the story of the work which has been done on them is well worth the telling.

The degradation of the clay lands is a geologic process which has been unwittingly accelerated by man, impelled by necessity to make a living from the soil. The process affects all the clay formations: Pliocene, Miopliocene, Miocene, Eocene; but the Pliocene, from the standpoint of damage and reclamation efforts, is the most important. Erosion has gained such momentum that man cannot hope to check it in the absolute sense. It has been demonstrated, however, that human ingenuity can use and modify natural forces in such ways as to provide tremendous benefits—not violently or suddenly, but slowly and painstakingly, taking strategic advantage of knowledge gained as the work proceeds. The jagged landscape must be shaped to fit human needs and the eroded material used to form new fields.

Cosimo Ridolfi, famed in the annals of Italian land conservation, said that *"la creta e' come un avaro che tiene stretto in pugno il suo tesoro a cui, per toglierlo, occorre a forza aprirgli la mano."* (The clay formation is like a miser who grasps his treasure tight in his fist; to take it away it is necessary to open the hand by force.) If the force is properly applied, the farmer, like the potter, can shape the clay for his own good and for prosperity.

NATURE OF PROBLEM

A concept of the enormity of this particular problem may be gained from the facts, first, that about 65,000 square kilometers (25,000 square miles), 21.5 percent of Italy's total land surface, are predominantly of clayey formation; second, that these formations are highly susceptible to destructive erosion; and, third, that 2,348 square kilometers (920 square miles) have already reached an advanced stage of erosion characterized by deep gullies, knife-like ridges, and steep-walled amphitheaters. This area is of record in scientific reports. If all the unrecorded bits and pieces were put together the total might be considerably larger. Year by year, new "bad lands" are being created. The clay lands, occurring at elevations from 60 to 700 meters above sea level, with average rainfalls of 600 to 1,300 millimeters (about 24 to 50 inches) and within ranges of temperatures adapted to crops, are definitely within the agricultural zones. Their conservation and management are complicated by the fact that much of the rainfall is concentrated in the late autumn and late winter months and that there are long dry periods during

the summer, making the land especially susceptible to erosion when the fall rains arrive.

Some of the characteristics of the soils are plasticity, which means they are converted into soft, sticky mud when wet; impermeability to water and air; and a strong tendency toward forming landslides. During wet periods vegetation has little chance to gain a foothold. During dry periods, wide cracks frequently occur. When the rains come, all the elements favorable to erosion are present. The water scours the gullies, forms rills on the slopes, enters the cracks and starts landslide action, and carries large quantities of soil in suspension. Very little water seeps into the soil; it races down the slopes and carries destruction in its path. The result, in the absence of control measures, is virtually complete break-down; an Arizona painted desert, done in toneless gray; an economic liability instead of a scenic asset. Fortunately, the picture is not always quite so bleak. The degree and rapidity of erosion are modified in localities where the slopes are not too steep or the rainfall too violent, where there is a good proportion of sand mixed with the clay, and where some of the original mantle of vegetation remains on the ground. Even under the most favorable conditions, however, the erosion control engineers, agronomists, and foresters are faced with a gigantic task: Rebuilding the ruins and preventing further destruction.

The troublous history of the clay lands and their destruction is not so clear as it might be. Historians have been prone to recount the wars, the progress of the arts, the political changes and the life of the cities, and to dismiss rather lightly the basic facts of agricultural development, however historically significant they might be. It can be confidently stated, nevertheless, that the Pliocenic clays were, in the main, covered with a humus-bearing layer of sandy soil and a mantle of forests. The inhabitants of the established towns and villages, often built on high hills for defensive purposes, cultivated the hills close to home. There, forests gave way to cultivation and the hills somewhat farther afield were closely grazed by domestic animals. Between 1000 and 1500 A. D. there were many wars between city republics and principalities and the natural balance was further upset by widespread burning of the forests and destruction of farming homesteads. It is entirely reasonable to suppose that many of the erosion problems inherited by the present generation originated dur-

ing that epoch, in which agricultural science did not share the upsurge of art and literature. In all probability the agricultural history of the other clay formations followed very closely that of the Pliocene.

In the old days the farmers, confronted by a land problem with which they were not able to cope, moved to new lands. Their former holdings, left without even the most primitive means of protection, unused except by grazing animals prone to destroy the remaining vegetation, were already prey to the forces of destruction. As time wore on and the population increased, farmers were forced to stay put and to see their lands and their livelihood ebbing away. Economically and socially, life became more complicated and difficult because not only were the hill farms destroyed but the resulting floods cut into river-valley farms and necessitated the building of expensive dikes—often of only temporary value. The silt carried to the river deltas and lower reaches created swamps and lagoons that put an end to farming and created a malaria menace to the health of the people. Present-day methods developed for using silt to build up agricultural land near river mouths, however costly, are a worth-while boon, but they can be effective in the long run only if flood flows are controlled by work extending over whole watersheds.

THE BEGINNINGS

The necessity of soil conservation on hilly lands was recognized in Roman and even Etruscan times. Relics of stone terraces built in those ancient days are still to be found in Italy. Typical examples of this system, constantly maintained throughout many centuries, are to be found along the Italian Riviera, the shores of the northern lakes, the precipitous coast of the Gulf of Salerno around Amalfi, on the slopes of Mount Etna, and the stony lands of Tuscany.

Among the earliest records indicating recognition of the special problems of the clay lands are certain writings of Leonardo da Vinci, engineer, artist, and philosopher of the early sixteenth century, who proposed the use of methods which may be viewed as precursors of those now employed. It was not until the latter part of the eighteenth century, however, that a serious famine in Tuscany stirred the scientists of that day to devise ways and means of increasing production by extending agriculture to clay lands that had been neglected

or misused. Landeschi, a parish priest, started in 1770 a system of terraces with sodded banks in sandy soil. He was closely followed by Testaferatta who introduced improvements and variations applicable to clay lands. The real father of the modern technique, though, was Cosimo Ridolfi, agricultural scientist and proprietor of the villa of Meleto, who developed a system that, in a highly perfected state, is still in use. It follows very closely the principles laid down by Testaferatta.

Briefly, this system is adapted to the venerable traditions and commonsense practices of Tuscany, a region in which the production of wine and olives has long been of paramount importance. The vines and trees are planted in rows between narrow fields of cereal and forage crops. Having determined that hillsides must be kept intact by building a series of ditches nearly on the contour, it was necessary to introduce a modification in the form of short, straight lines in each row to accommodate the wires supporting the vines. The result has been a herring-bone pattern, with each ditch just above the vine-and-tree row. The ditches have just enough grade to carry the water off and allow the deposit of silt caught from the intervening fields. At intervals there are ditches on steeper grades, lined with sod, stone, or cement, which carry the surplus water to channels or catchment basins below. It should be understood that the herring-bone system cannot be employed on severely eroded clay lands until the slopes have been greatly smoothed out and moderated by a long and painstaking process. This consists primarily of building a series of small dams in each watercourse, starting at the bottom, and raising the dams as they become filled with the silt or mud washed down during rainy periods. At the same time the ridges are attacked by building ditches to accelerate erosion and hasten the filling of the dams, with the ultimate object of giving the whole terrain a shape which permits safe cultivation. At first glance, the deliberate use of induced erosion in a conservation project may seem incongruous. However, one has only to see the process in actual use to be convinced that it is logical and consistent. After all, the soil that is removed from the ridges is ultimately used for producing crops. Across every watercourse with enough width to permit farming operations there is built a series of low earth dams to impound the silt. When the process is completed and the soil has been given whatever

treatment it requires to make it productive, every catchment basin is a farmed field.

Cosimo Ridolfi, who is revered by the conservation-minded scientists of Italy for his splendid work and for the wealth of written material he left behind him, was born in 1794. By 1818 he had already published his ideas about the reclamation of Tuscany's wasted clay hills. In 1828 he put forth a completely charted plan for Meleto—in the fashion of today—and from that time until his death in 1865 he was continuously engaged in improving his property in accordance with the plan. Since his death the work has been continued without interruption by his family and descendants. Under the tenantry system of Tuscany (*Mezzadria*) that means not only that the land has been improved for its owners but also for more than 40 resident farm families.

Little by little, over a period of more than 100 years, the dream of Cosimo Ridolfi has become a reality. The work is not yet finished; there are still a few ragged banks to reclaim and a few little valleys to improve and make more fertile. Unlike other systems used in America and elsewhere, the Ridolfi method undertakes, not to stop all erosion, but to slow it down to the point where every particle of sediment that comes off a hillside can be used on more nearly level land below.

Ridolfi not only made *sistemazione* his life work but also, through his dynamic personality, inspired scientists, landowners, and practitioners to follow in his footsteps. Meleto was the model 100 years ago. Today it is a shining example of the almost-finished product.

Many other projects have been started and are now well on their way. Work at Cadiroggio in Emilia was started in 1860. In the same region an ambitious plan to improve the mountain basin of Brisighella was tentatively inaugurated in 1909, gradually gaining momentum until it became a full-fledged project in 1922. Except for the war years, it has been continuously prosecuted ever since and now makes an impressive showing. Later, extensive works which are still active were started in Val d'Era and Val d'Orcia. Other projects in clay areas have been undertaken in the region of Marche and elsewhere. In each case, advantage has been taken of experience as well as of new scientific developments. Modifications of the system have been adopted to fit local conditions, which are never the same in any two areas. It is also necessary to vary the methods to suit

the demands of the local economy and the prevailing types of agriculture. One of the most interesting developments is at Brolio in the region made famous by Chianti wine. Here the Ridolfi system has been adapted to grape and olive culture on hills so rocky that the casual observer would be inclined to dismiss them as fit for nothing except a scrubby growth of woods.

ORGANIZATION

Reclamation and *sistemazione* of land and water supplies are undertaken by associations of farmers known as *Consorti*, very much like the cooperatives in certain other countries. Each *Consorti* may have on its staff such agronomists and engineers as may be required to plan and supervise the work. No direct control is exercised by the central government but government funds may be allotted to supplement funds contributed by the members. The word "reclamation" in its broadest sense is expressed by the term "*bonifica*" or "*bonifica integrale*," which means doing all the things in an area, usually a watershed, which need to be done in order to make the land productive—erosion and torrent control, systemization of fields, pasture improvement, and reforestation—and to harness the water supplies for irrigation, flood control, and sometimes water power. This comprehensive program received considerable impetus 25 years ago but progress was interrupted by the war. Under the handicap of reduced budgets and greatly increased costs, it has been resumed. Active *bonifica* programs are under way now in Val d'Era, Val d'Orcia, Brisighella, and a number of other areas in various parts of Italy.

Besides land and water operations, the plan generally contemplates building a network of roads to make all farms accessible to market and houses for settlers on reclaimed portions of the area, as well as the provision of water supplies, schools, and other essential services.

CONSERVATION METHODS IN BRIEF

The logic of control methods used may be more readily appreciated if it is realized that the clay ridges, cliffs, and banks have no soil profile—no topsoil, no subsoil, no bedrock in the usual sense. The formation is actually an extremely soft rock of great depth, usually with thin strata of sandy material. It weathers into clay or mud immediately upon exposure to the air and when the mantle of vegetation is removed is highly subject

to erosion. Briefly, the objectives of the treatment are to arrest the destructive processes, to remodel the slopes, and to make the soil permanently fit for agricultural use.

The measures commonly used are:

1. To eliminate destructive flows and landslides by guiding the water in ditches built according to plan.
2. To stabilize the watercourses by the construction of dams designed to regulate the flow and cause the deposit of soil carried in suspension.
3. To remodel the slopes, achieving an "angle of repose" which permits cultivation.

The first measure is a preliminary to make the others possible. The second is started before the third, or contemporaneously with it. It generally starts with the building of a dam near the junction of the watercourse and the valley to insure rapid filling. The construction of the other dams proceeds upstream, and filling is often hastened by the process of remodeling the slopes. The lower dams frequently result in the formation of small fields suitable for farming. The process is not complete, however, until the slopes have been properly shaped. Sometimes the dams are raised several times to catch all of the silt. The third measure is accomplished by blasting to break down large masses of material and by hydraulic action: running rain water in ditches down the crests of small ridges to start the remodeling process and carry the surplus material to catch basins below. Ditches may also be built for this purpose across the slopes at various angles. After the rainy season, the process of rounding off the slopes and bringing them to a suitable grade is completed by hand work and ox teams. Heavy machinery, which might be used effectively in many instances, is usually not available. The action of the water, although it can properly be termed induced and guided erosion, has the special value of washing colloids and excess salts out of the soil and causing the deposit of the elements fit for tillage. From personal observation it can be stated that in some cases remodeled and tilled slopes up to 25 percent show very little erosion from rains of considerable duration and intensity, provided that drainage ditches or furrows have been properly installed. When the work is completed, the fields themselves may assume various forms, such as those divided by permanent ditches and tree rows at Meleto, gently sloping earth terraces at Volterra, or rounded "angle of repose" slopes at Brisighella.

PRIZE MONEY PUT TO WORK

By FRANK H. MENDELL

FOR THE past 4 years, winners of the *Omaha World-Herald* contest have snowballed their winnings by reinvesting them in equipment and other measures to increase the amount of soil conservation being applied in their Iowa districts.



Don Anderson discussing grassland farming with Harry and Carl Anderson at the Field Day.

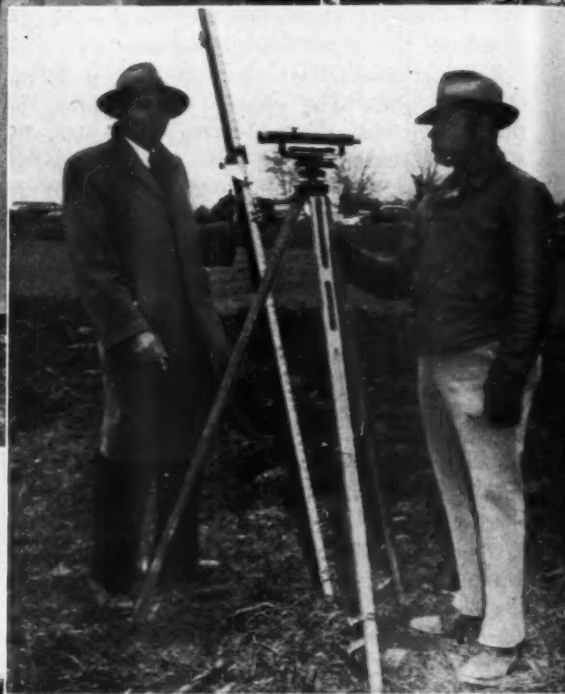
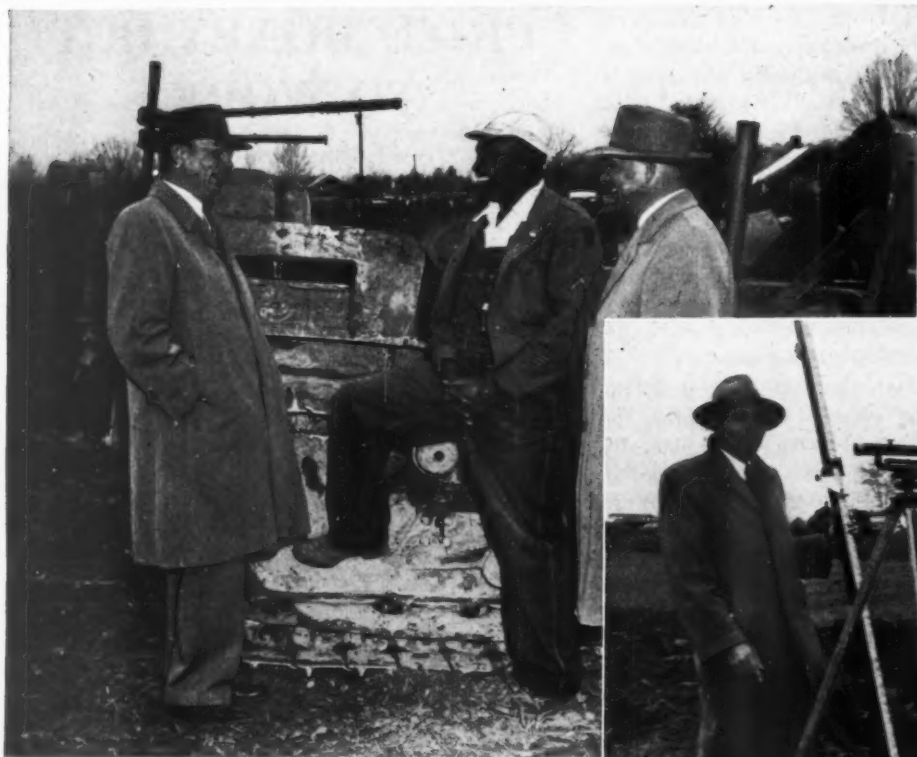
This was true of the Page and Mills Soil Conservation Districts which won in 1945, the Harrison and Montgomery Districts in 1946, the West Pottawattamie and Carroll Districts which walked off with the honors in 1947, and the Taylor and Shelby Districts which won last year.

When the Page district commissioners received their check for \$500 they went into partnership with Richard Ratliff and purchased a tractor and attachments to do terracing work. This partnership was dissolved in the fall of 1948 with the expenses all paid up and the district commissioners reporting a net worth of \$2,416.22. This equipment resulted in more terraces and terraces of better quality.

In addition, the Page district commissioners purchased 60 copies of the book "The Land Renewed," by William R. Van Dersal, for rural schools, offered prizes for conservation scrapbook

NOTE.—The author is State conservationist, Soil Conservation Service, Ames, Iowa.

(Continued on page 278)



Transformation!



ON-THE-SPOT PICTURES.

Top, left: Oddie Torain smiles broadly as State Soil Conservationist Earl B. Garrett (at left) outlines face-lifting job. Looking on is District Extension Agent J. W. Jeffried. In background is a tractor used in demonstration, Torain's house, part of the crowd.

Top, right: In foreground are Frank V. Duffy, soil conservationist, and J. C. Hubbard, county agent, shown helping direct the huge job.

Center: Duffy and R. L. Mohler, another soil conservationist, prepare to survey additional acres for conservation treatment during demonstration.

Bottom, left: Bulldozers and earth-mover help telescope 5 years' conservation job into single day's activity.

Bottom, right: One of 20 tractors on site here disks a seedbed in preparation for planting alfalfa.

By SHERMAN BRISCOE

MOST Orange County, N. C., colored farmers en route to town now bring their cars to a halt at Oddie Torain's farm to observe the model soil and water conservation practices.

Torain's 107-acre farm was face-lifted last March in a giant demonstration sponsored by Orange County colored farmers in cooperation with the Neuse River Soil Conservation District. Federal and State agencies and several local business firms assisted in the project.

The demonstration, first of its kind to be conducted on a Negro's farm, included planting trees, building terraces, establishing contours and strip cropping, liming and seeding a pasture to alfalfa, healing gullies, and seeding border areas along the road to sericea lespedeza. A poultry house was built, and the home was repaired, modernized somewhat, and painted.

Torain's farm was selected because it is favorably situated on one of the main roads to Mebane and Hillsboro and because the conservation practices needed were typical of those needed on most other farms in the county. The quality of the



NOTE.—The author is information specialist, USDA, Washington, D. C.

farmer himself was a factor, too; conservation practices, no matter how well they are established, must be maintained.

Until a few months ago, the 29-year-old Purple Heart veteran had been a share cropper, but he had demonstrated real farming ability. Despite the fact that his parents were share croppers, he was one of the outstanding colored 4-H members in his county for 7 years, and was the first to plant hybrid corn.

As a 4-H Club member, he used to tell his 25 sisters and brothers that some day he was going to have a piece of land of his own. The war and a 3-year tour of duty with the Ninety-second Division interrupted his plans. But when the war was over, Torain came home, married, and began working toward that farm of his own. He and wife saved part of their share-cropper earnings and kept their eyes open for a good buy. Last fall they found the farm they wanted, dug deep into their savings, and made the down payment. They moved in last January.

Then came the face-lifting demonstration, 2 months later. With 2,000 farm people looking on, while another hundred operated tractors, lime spreaders, seed drills, bulldozers, and other pieces of equipment, Farmer Torain ventured to a neighbor, "If I'm dreaming, please don't wake me up."

PRIZE MONEY

(Continued from page 275)

contests, and provided the district with stationery, postage stamps, and other incidentals.

The Harrison district commissioners also decided to purchase terracing equipment. They later sold it when contractors became available to meet the farm needs. They not only paid for the equipment but accrued about \$1,100 in the treasury. An investment was made also in a 35-millimeter camera. Awards were provided for conservation work in the rural schools, stationery and stamps purchased, and dinners given to local co-operators and district personnel. These contributions were estimated at about \$600.

The Mills district commissioners used their reward money for a used aerial camera, hand levels, fertilizer for plot studies, and the publishing of the annual report.

The West Pottawattamie Soil Conservation District has purchased a 35-millimeter camera and

plans to buy some terracing equipment if it is needed.

The Montgomery District purchased a copy of "The Land Renewed" for every rural school. Commissioners are now considering the purchase of slide and film-strip projectors for use of rural schools.

The Carroll commissioners purchased a whirlwind terracer last year and swelled its treasury by \$150.

The Taylor and Shelby commissioners are considering the purchase of a cultipacker seeder to demonstrate the use of this type of equipment which is not now available in southwest Iowa. Other projects being studied include materials for use in schools, soil-testing equipment, and seed production of improved grasses and legumes.

Perhaps the outstanding feature of the *World-Herald* program is the recognition banquets in winning districts. Three farmers in each district, their wives and children, landlords and tenants, are honored for the recognition they have brought to their soil conservation district. Corsages for the ladies, flowers for the tables, miscellaneous entertainment and a good speaker make these events memorable.

Iowa has 15 soil conservation districts which are in the newspaper's territory and therefore eligible to compete. Each year participation has been virtually 100 percent.

Commissioners select three farmer cooperators to represent the district. If the district wins, the individual farmers receive certificates and are honored as outstanding soil conservation operators. The district receives \$500 in cash and a plaque.

Judging is done on a score-card system. Points are assigned for proper land use; needed conservation measures adopted; crop rotations according to soil type, slope and erosion; quality of work accomplished; and leadership in getting others to adopt soil conservation. The cost of applying the program is also credited.

THIS IS CONSERVATION, TOO.—Farmers now receive \$140,000,000 a year in earnings of their United States Savings Bonds. This sum is the farmers' share of the interest on the national debt. Widespread ownership of Savings Bonds makes for stability of the general economy, as well as added protection of millions of farm people in the ownership of their homes and the maintenance of their land resources.

MORE CORN

(Continued from page 268)

330,000 feet. That means about one-fourth of the project has been completed.

Neely reports that next year, with tile and labor more plentiful, the group hopes to finish a large part of the job. Up to now the only outside help has been furnished by Wayne Sass, a neighboring farmer, who has operated the machine on a part-time basis. Sass has made arrangements to operate the machine full-time next year.

Members of the association have been more than satisfied with the work done and with corn yields, according to Hugh Neely. Besides Hugh, the membership includes Roy S. Neely, Winnifred Neely, C. E. Comly, John H. Neely, W. C. Neely, Robert Smith, Wilma Engdahl, Homer Green, Mrs. Conger, and Reint Poppen.

When the job is finished, the owners will probably sell the tiling machine. At present prices, the work is costing about \$100 per acre.

NORTHEAST



BANKS GIVE MAGAZINE.—The chairman of the agricultural committee of the State Bankers Association of West Virginia has recommended that the 150 banks in the Association cooperate with their local soil conservation districts to provide a year's subscription to the Soil Conservation Magazine to each new cooperator, and to as many of the old cooperators as possible. One of the districts—Potomac Valley—already is giving the magazine to 150 cooperators.

BERRY OUTLOOK BRIGHTENS.—Ben Fleet, a blueberry grower in East Sandwich, Mass., has just finished an advance of 10 years in his farm industry, all in 1 year. It came about as the result of land use information supplied to him by SCS technicians with his complete farm plan. "This information advanced me at least 10 years in my blueberry enterprise. It would have taken me at least that long to gain the information they gave to me, because it would have had to be obtained by trial and error. Aside from land use information, the locating and designing of drainage ditches and information on land clearing methods were very helpful," says Fleet.

POWERFUL LOT OF PLANTING.—More than a quarter million trees and shrubs will be planted, starting in mid-April, on farms of 110 cooperators in the Oneida County (N. Y.) Soil Conservation District. Cooperators will plant 160,000. The remaining 100,000 will be planted by crews from the Fish and Game Division of the State Conservation Department at a cost to farmers of \$7.50 per acre. Last year 66,000 trees and shrubs were planted on Oneida District cooperators' farms.

COULDN'T WAIT.—Harold Ochs, Readington Township farmer near Flemington, N. J., had a complete conservation farming plan, and he wanted to put it to work. He didn't have a tractor and his prospects for getting one were no nearer than next spring. However, he did have two Percherons and a walking plow, so he took the team and the plow and went out and built 900 feet of diversion terrace on one of his fields in 3½ days, without cash outlay. Jesse Denton, technician with the Mid-Jersey District, helped him.

"Erosion just didn't seem to be waiting for better opportunities to attack my topsoil and steal more of it away," Ochs says in explaining why he didn't wait until spring when he would have had his tractor. When the tractor does arrive he'll be ready to install more practices in other fields where gully and sheet erosion are taking large tolls. He expects to have all practices fully installed in less than 5 years, and he'll do most of the work with his own equipment—the tractor and machinery he has on the farm right now. In Hunterdon, Ochs' home county, there are 199 other farmers who have complete conservation plans.

CORN ON CONTOUR.—Right when Carl Haischer, work unit conservationist in the Upper Ohio Soil Conservation District, was getting ready to organize a Pleasants County "hundred bushel" club as an incentive for corn growers, along came John Ross, a district cooperator, with a yield of more than 130 bushels per acre.

That's big news in West Virginia corn-growing circles. Contour farming enabled Ross to get top values out of soil, water, seed, manure, and fertilizer. On less than ¾ acre of soil, using U. S. 13 (hybrid) seed, 8 loads of manure, and 500 pounds of 4-12-4 fertilizer, he raised an even 100 bushels of shelled corn.

In addition to saving soil through erosion control, contouring let all the rainfall soak into the ground right down around the roots of the corn, and then kept the corn growing during the later hot and dry periods when corn normally stands still or wilts. Ross says growing corn on the contour lightens the labor load by making it possible to plow, plant, and cultivate less ground, and still get a larger yield.

CONTRACTORS WERE GUESTS.—Supervisors of the three Worcester, Mass., soil conservation districts strengthened their teamwork with farm contractors when they were hosts at a get-together. Nearly 50 contractors, operators, and SCS workers attended. The program started with movies, followed by a short talk in which it was emphasized that districts are not in the farm machinery business and that their leaders believe contractors can be mighty helpful in getting more conservation practices on the land. There was joint discussion of points involving use of specific machines in land clearing, such as what size is best and on such debatable issues as grubber blades versus straight blades. Also considered, was a 5-percent rebate to the district treasurer.

When it came time for "eats"—coffee and doughnuts—the group was joined by members of the Worcester County Vegetable Growers Association, which had been meeting nearby.



Rice Hulls for Seeding

Seeding forage mixtures with a grain drill, using rice hulls to hold together seeds of different sizes, shapes, and weights. This beats broadcasting. Drilling is simplified, and better stands result.

By WILLIAM L. SOUTHWORTH

THE lowly rice hull, long considered a waste product of little commercial value, appears headed for a modest share of fame. It apparently holds the answer to one of the farmers' oldest and most vexing problems—how to sow mixtures of different kinds of seeds in a single operation and get uniform distribution of all seeds regardless of variations in size, shape, or weight.

Discovery of the unique virtues of rice hulls was made by the Soil Conservation Service nursery at Pleasanton, Calif. It resulted from the problem of seeding mixtures of many of the new conservation forage grasses developed by the nursery.

Most of the trouble arose from the difficulty of calibrating grain drills to sow the right amounts of differing kinds of seeds recommended for planting mixtures. Too often the small and relatively heavy seeds rushed out of the drill spouts, leaving the lighter, fluffier ones behind. This resulted in

spotty, uneven stands which defeated the purpose of the mixtures.

Knowing that seeding difficulties would doom widespread use of new mixtures badly needed to protect and improve California's range lands, O. K. Hoglund, agronomist at the Pleasanton Nursery, determined to find a practical solution. From experiments conducted at San Fernando by Dr. A. L. Hafenrichter and Paul Lemmon, he was convinced that the answer lay in adding a carrier or "dilutent" to hold various seed mixtures together. Hafenrichter and Lemmon had found varying degrees of success with bran, sawdust, cracked barley, and various other carriers.

Hoglund tried them all, including sand. None was completely satisfactory. Sand was impractical; it left the light, fluffy seeds behind. Furthermore, it usually had to be dried before it could be used, and frequently it contained objectionable foreign matter. Sand was also damaging to the drills because of its abrasive action on moving parts. Sawdust was not dependable; small chips or sticks clogged the drill and it had a

NOTE.—The author is information specialist, Soil Conservation Service, Portland, Oreg.



The magnified close-up reveals careful cupping of round, black seeds of subterranean clover, the burr-like seeds of burnet, the barely distinguishable seeds of Harding grass. At our left we look at one of the first field seedings in California where rice hulls were used; part of a 30-acre field on the L. Z. Mitchell ranch near Corning, which was seeded with a grain drill in the fall of 1947. Above, an examination is made to check on the thoroughness of mixing.

tendency to form a "bridge" over drill-spout openings when the least bit moist. Cracked barley showed the most promise but it was expensive.

More out of desperation than hope, Hoglund tried adding liberal quantities of rice hulls to various mixtures. The results startled him. Each hull acted as a tiny cup which held small clusters of the different seeds in the mixture. Those not trapped in the cups, seemed to "float" in the small spaces between the hulls as if held by millions of invisible little hands. Fed through a grain drill, set for seeding barley at the rate of 160 pounds per acre, the seeds and rice hulls came through in almost precise proportion to the rates of mixture. It made no difference whether the seeds were large or small, heavy or light, they were

all distributed uniformly by the rice hulls.

Hopeful but not wholly convinced, Hoglund resorted to a mechanical seed cleaner and separator. No amount of cleaning could separate more than 50 percent of the seeds from their possessive rice hulls.

Hoglund made his discovery in the fall of 1947. The first field planting with rice hulls in their new role was made on the L. Z. Mitchell ranch near Corning, Calif., in October of that year. Thirty acres were seeded to a mixture of Harding grass, burnet, and subterranean clover—seeds having widely different sizes, shapes, and weights. The result was a vigorous, even stand of high-yielding forage. The uniform growth of all plants, now in evidence 18 months later, lends powerful sup-

port to Hoglund's conviction that rice hulls may eventually revolutionize the method of sowing small-seeded forage mixtures.

Further support comes from Graham Nissen, a director of the Eastern Alameda County Soil Conservation District and copartner in the Nissen-Engblom farming and livestock enterprise. "Two years ago," says Nissen, "we broadcast-seeded an acre and a half to a mixture of alfalfa, orchard grass, Ladino, trefoil, and rye. The Ladino and trefoil failed to appear and the entire seeding was spotty. Later we seeded 10 acres with a grain drill and used rice hulls to hold the various seeds together. We got an almost perfect and uniform stand. I have just finished mixing up a batch of seeds and rice hulls for another 45 acres that we'll seed this spring as soon as the weather is right."

Like numerous other California ranchers, Nissen believes that drilling is far superior to the old broadcast methods. "Drilling, with rice hulls," he says, "is the most efficient, easiest, and cheapest method I know for seeding forage mixtures."

There is little to the job of mixing seeds and rice hulls prior to putting them in the drill box. "All you have to do," says Hoglund, "is spread a 6-bushel sack of rice hulls on a tarpaulin or clean floor to a depth of 6 inches or more. Weigh out the proper quantities of the various seeds and scatter them over the hulls fairly evenly. Then mix together with a shovel. Set the grain drill for 160 pounds of barley per acre, place the mixture of seeds and rice hulls in the drill box, and you are ready to go."

From experience, officials at the Pleasanton Nursery have found that the most efficient rate for small-seeded grasses and legumes is about 16 pounds, or 2 bushels, of hulls per acre.

Rice hulls and seeds can be mixed in considerable quantity and stored in bags for later use. There is no danger of seed separation regardless of the amount of handling. Because of their bulk, however, one sack of rice hulls, about 6 bushels, is all that can be handled efficiently at one mixing. Larger quantities make it difficult to get even distribution of seeds through the hulls.

The advantages of using rice hulls for seeding forage mixtures with a grain drill are numerous. Most important is the even distribution of all seeds and the uniform forage stands that result. The simplicity of the process is a strong talking point. Anyone familiar with a grain drill can make the proper drill settings and forget all worry as to

seeding rates. Exacting and time-consuming drill calibration, at best a job for an expert, is a thing of the past. A single drill setting does the entire job. Farmers can also forget grass seeding attachments; the rice hulls and seed all go in the grain compartment together. Seeds of all kinds, sizes, shapes, and weights can be used with rice hulls. In sowing mixtures which include large seeds, such as vetch or bigger, the volume of rice hulls should be reduced by about one-half the total volume of the large seeds. Rice hulls work equally as well with alfalfa hay seedings as with grass-legume mixtures.

Rice hulls will keep almost indefinitely. They can be purchased in quantity and stored over a period of many years. They are clean and feed readily through a grain drill with no danger of clogging or "bridging." Moisture has little effect on the hulls. They are tough, elastic, and decompose very slowly.

Rice hulls are plentiful in California where, until recently, they were considered a waste product and consigned to the bonfire. A few processing mills in the past have developed a small commercial market for the hulls as poultry bedding and now ship them in limited quantities to certain parts of the country. Because of their bulk, which increases shipping costs, and the relatively light demand for them, rice hulls are usually scarce except in rice-producing areas. The supply, however, is more than adequate to meet any demand that might result from their use in seeding forage mixtures, according to California authorities.

SOUTHEAST

WHY PLANT ROW CROPS?—Clifton Welch, of the Simpson County Soil Conservation District, Miss., asks, "Why plant row crops at all when you can grow oats for winter grazing and for grain in late spring, followed by lespedeza for summer grazing or hay, the first year, and grazing plus seed and cover to turn under the second year. This not only controls erosion and increases farm income, but makes it possible to handle more acres and cattle. I am completely out of row crops now."

EVERY FARMER NEEDS ONE.—When Walter Myers, war veteran, bought an 85-acre farm in the Bullitt County Soil Conservation District, Ky., he went to the supervisors for advice on how to stop erosion in one of the fields. The SCS technician and one of the supervisors, B. F. Robards, visited the farm. They pointed out to Myers that the field was not suited to row crops, but would be excellent for alfalfa or orchard grass and should be terraced. After the terraces were constructed, he decided on a complete farm plan. He thought so much of the plan that he commented, "I don't see why every farmer doesn't get a plan like this. Why, with this plan, I can tell what land needs lime and phosphate, how much to apply, and where to plant row crops."

WINTER GRAZING BEST.—Glen Tullos, of the Rials Community, a cooperator in the Simpson County Soil Conservation District of Mississippi, says winter grazing is the solution to winter feeding for beef cattle. They will gain more pounds per acre grazing in winter on the same acreage, than in summer he contends.

EVERYBODY LIKES IT.—Supervisors of the Piedmont Soil Conservation District, Ala., report that they "laughed at themselves" at a recent meeting when they recalled how timidly they started carrying out their farm plans 10 years ago. "In the first place," they note, "about all we agreed to do, and really meant to do, was to set out some kudzu on our rougher land. The idea that it was better to put most of our land in thick-growing, erosion-resisting crops never occurred to us. If it had, we would have thought we couldn't make a living that way. Well, we were taught a lesson by what happened to our old rough land. We set it to kudzu and in a few years it was producing more feed than any other land on the farm. We began to wonder, if that sorry old land would produce more feed, what would happen on our better land?"

"We began inching out on the better land. Here's what happened. In 10 years we put thick-growing crops on 200,000 acres of land where such crops were not grown before. That's nearly one-third of our open land. We had a little before we started, mainly in pastures. Who ever heard of a farm 10 years ago that did not have any cultivated crops? We have many such farms today. The owners report that they are producing more food than ever before.

"Another thing, 10 years ago if we had started out to grow feed for a cow it would have been about like this: A few acres of summer pasture, a few acres of soybeans, and a little grain of some kind. Who would think of feeding a cow that way today, even if there were no soil erosion? We have found out the only way to feed cows is to let them graze on erosion-resisting, thick-growing crops. Crops like that require little land preparation and no cultivation at all. The cows like it better. The land likes it better. We like it better."

PLAN WORTH \$4,600.—Alden McNair, of the Hinds County (Miss.) Soil Conservation District, bought a farm in 1937 for \$2,300 and sold it in 1938 for \$11,500. He estimates that at least 50 percent of the increase in the value of the farm was due to his application of soil conservation practices.

44 MILES.—Five community drainage projects in the Black Belt Soil Conservation District, Ala., completed 9 miles of drainage channels in 1948 with draglines, and 35 miles of lateral ditches with drag pans. A dragline lent to the district by the Soil Conservation Service stimulated interest among landowners to the extent that it was necessary to call in private operators to take care of the demand for drainage.

THANK YOU, SIR.—R. B. Kelly, beef-cattle farmer near Sylacauga, in Talladega County, Ala., expresses his opinion of the soil conservation program in his county by saying, "I like the term 'work unit' on the door of the Soil Conservation Service office. I think that term is very appropriate to Soil Conservation Service workers."

LIKES CROOKED ROWS.—Rupert Watson, cooperator with the Grayson County (Ky.) Soil Conservation District, says that he didn't like crooked rows at first because his horses had to walk on rows of corn in turning short corners. "But when I gathered my corn and saw how much my yields increased, I liked them. Now, I know how to keep from having such short turns. Next year I'll plant more short rows out in the field instead of trying to make those short turns in the longer rows."

UPPER MISSISSIPPI



CONSERVATION OSCARS.—The *Monroe County* (Iowa) *News* was cited for service in the field of conservation at the 1949 convention of the Iowa Press Association in Des Moines.

The recognition, and a plaque, came to the *News* from the Iowa Conservation Commission.

Two Service to Conservation awards were made by the State Commission. The *News* won in Class I, for communities over 1,400 population. Class II honors went to the *Schleswig Leader*.

STAMP OF APPROVAL.—The Michigan State Soil Conservation Committee at a recent meeting approved the idea of soil conservation districts being allowed to purchase subscriptions to *SOIL CONSERVATION* Magazine and to make this a reimbursable item to be paid for from State funds. A number of Michigan districts are placing the magazine in school libraries, in addition to subscribing to it for the use of district directors.

BIG DOIN'S IN HAWKEYE STATE.—More than 319,000 Iowa farmers attended soil conservation field days, tours, demonstrations, and plowing contests during 1948. This is more than double the number at similar occasions in 1947.

State and national events drew the largest crowds, accounting for 229,500 of the total. These included the All Iowa Soil Conservation Field Day on the Ben Cole farm in Clarke County, the National Plowing Contest and Soil Conservation Field Day in Dallas County, the National Plow-Built Terrace Contest in Shelby County, the Forage Field Day in Jones County, the Pilot Rock Soil Conservation Field Day and Plowing Contest, and the Conservation Sunday sponsored by the Warren County Soil Conservation District as a follow-up to the field day held in 1947.

Conservation practices which are essential to good land-use programs were demonstrated at all these events.

Twenty-three local or county-wide contour-plowing contests and field days drew 28,500 people. Onlookers were shown the right ways to prepare grass waterways, build terraces, improve pastures, control gullies, establish drainage systems, install contour cultivation, construct diversion ditches, spray weeds, and adjust plows.

QUESTIONS.—Michigan soil conservation districts report that one of the most effective drawing cards in getting attendance at annual meetings recently has been the staging of quiz-kid contests. For example, the Leelanau Soil Conservation District drew more than 200 people to its annual meeting with a quiz-kid contest the main event.

SOUTHWEST

RESCUED AND PUT TO WORK.—The remaking of a 7,000-acre ranch considered practically worthless during the soil-blowing years of the '30's into a steadily improving range area which can provide grazing for 200 to 300 head of cattle the year around is the accomplishment of H. C. Farber and his son. Oldtimers agree that the Clayton place once was one of the best grass-producing parts of Union County, N. Mex.

About one-fourth of the present ranch had been badly overgrazed by sheep. The rest of it at one time had been owned by a dozen farmers who tried to cultivate this land that once had produced excellent grass. As a result, during the long drought, cultivated fields blew out and onto the grasslands to such an extent that, at the time the Farbers took over, it was practically impossible to determine where field boundaries had been and where there was supposed to be grass.

The first job was to fence the entire ranch so they would have absolute grazing control. This was done prior to 1940. In 1943, the Farbers entered into a cooperative agreement with the Northwestern Soil Conservation District and SCS technicians helped plan a complete soil and water conservation program.

Some 2,000 acres needed to be reseeded, and deferred grazing was necessary on the other 5,000 acres. Several stockwater developments were required.

The job was too big for 1 year, but the Farbers started as soon as their conservation plan was worked out and have been at it ever since. Nearly 1,300 acres now have been planted to various grasses, including the gramas, buffalo, galleta, western wheatgrass, weeping lovegrass and sweetclover.

Crested wheatgrass in pure-stand seedings made in 1945 and 1946 produced an enormous amount of forage in 1948. Not all the seedings resulted in perfect stands, but none was considered a failure and all are continuing to improve under proper use.

The elder Farber says that, based upon his experience of the last 5 years, he considers it very important that sweetclover be included in all grass-seed mixtures in this area of New Mexico. He says the clover not only builds the soil for better grass production, furnishes shade and protection for the young grass, and makes quick cover for protection against wind erosion, but also provides a lot of grazing when the fields are ready for use.

The Farbers have made use of equipment provided by the Northwestern Soil Conservation District in continually adding to the livestock water supply. Springs have been developed, storage facilities at existing wells have been enlarged, and pits are to be constructed in wet-weather lakes to provide permanent water.

Although the job isn't completed, the Farbers have demonstrated that even land that has been misused to the extent that it was considered practically worthless can be made productive again under proper management.

Through the years of change, conservative grazing has been followed annually. Fields sown to grass were protected, as were sand dune areas. Today, the vegetative cover on the ranch is far from being excellent, but when it is considered that 7,000 acres of practically worthless land now supply good grazing, it can be realized that a near miracle has been accomplished. Land can be productive and profitable when used according to its capabilities.

WHOLE FARM TILTED.—Dr. W. M. Trimble didn't have any idea that one corner of his 95-acre farm was 8 feet higher than the far corner diagonally across. Nor did Lou Groehler suspect that he was keeping up a mile of worthless irrigation ditch on his 80 acres.

Surveying instruments reveal surprising things about land that has been in cultivation 60 or 70 years. But farmers act fast when they know how much they're losing in wasted water and less-than-maximum production, according to Dave Hulet, district conservationist at Chandler, Ariz.

Trimble and Groehler are supervisors of the Mesa Soil Conservation District, which was organized in 1946 and covers a continuous block of 35,000 acres of the oldest farms in Salt River Valley.

Everybody had assumed that the Trimble place, east on Mesa on the Apache Trail, was as flat as it looked. When an SCS surveyor plotted its differences in elevation and contour, Trimble got busy. All except a 20-acre citrus grove now has been land-graded three times. Ultimately all will be contoured and concrete pipe laid for irrigation. In the meanwhile, distribution and penetration of water are much improved and bigger crops are being produced.

Groehler always had irrigated from north to south. His lay-out required $1\frac{1}{4}$ miles of ditch, which is a lot to maintain. He wondered if he couldn't irrigate to the west. Men with transits came along and told him he could. The fall in that direction was only half as much as to the south, and he could eliminate a full mile of ditch. Groehler acted on the information and now is making big savings in labor and water.

Hulet reports that 1,786 acres in the Mesa District already have been leveled, and that 500 more have been staked for leveling. Irrigation systems for 2,363 acres have been rearranged and 1,321 concrete structures have been installed. Crop residue management is another practice getting a lot of attention in this district.

BETTER RANGE AHEAD.—A complete range conservation program has been planned for the 9,400-acre Settlement Canyon watershed in the Grantsville Soil Conservation District near Toccoe, Utah.

In a severely depleted condition last fall, the range was found noticeably short of good pasturage when a survey was made by stockmen and SCS range specialists.

Livestock grazing will be reduced 65 percent and fences will be erected to keep stock off one area to build up its vegetation. Additional water developments are planned for better distribution of grazing. Where native grasses have been depleted, reseeding will be done. The reseeded areas will be protected until the plants are mature enough for grazing.

Tom Nix of Tooele, representing the sheep interests, and Allen Warr of Erda, president of the Settlement Canyon Land and Livestock Association, have approved the conservation project.

NEW GRASSES UNDER TEST.—Farmers and ranchers of Weld County, Colo., this year will have an opportunity to get acquainted with some grasses which have not been widely grown in this area.

Lloyd A. Acott, SCS technician assisting the West Greeley Soil Conservation District, and George James, county agent, have planted the grasses on Marshall Anderson's place near Greeley. Acott and James will arrange for interested farmers and ranchers to inspect the demonstration plot from time to time.

Included are green needle, sand love, stiff-hair wheatgrass, East Indies bluestem, intermediate wheatgrass, Russian wild rye, tall wheatgrass, Ladino clover, orchard grass, smooth brome, and meadow fescue.

While the last three are standard pasture grasses, Ladino clover has been used in irrigated pasture mixtures in only a few sections of Colorado.

Stiff-hair wheatgrass and intermediate wheatgrass are expected to compare favorably with crested wheatgrass for dry-land ranges. Sand love has shown up well on sandy land.

Acott said tall wheatgrass has been found adapted to wet, seepy areas where other grasses have not done well, and later may be used in wet areas in Greeley County.

Sand love, East Indies bluestem, Russian wild rye and intermediate and tall wheatgrasses are range-land varieties not heretofore used to any great extent in this area.

WESTERN GULF



EVENTFUL DECADE.—The Saline Soil Conservation District of northwest Louisiana has been in business 10 years. Recently it held an anniversary meeting to take

a look backward and to peer into the future. About 250 farmers and businessmen came to the meeting.

Ruel D. Conly, chairman of the board of supervisors since the district was organized, pointed out that in the 10 years there had been great changes in the use and treatment of the land in the district. Much conservation work has been accomplished, much more remains to be done, he emphasized. He cited these figures:

Cover crops are being grown on 37 percent of the acres requiring this conservation practice; 9 percent of the drainage job has been done; 24 percent of the 183,201 acres in pastures have been improved, 20 percent of the improved acreage having been seeded to grasses and legumes; 26 percent of the needed 700 stock ponds have been built; 12 percent of the 318,576 acres in farm woodlands have been placed under conservation management; contouring has been done on 14 percent of the 196,097 acres in need of it, terracing on 10 percent.

Sylvan Nelkin, dean of the school of agriculture, Northwestern State College, Natchitoches, La., and secretary of the Louisiana Association of Soil Conservation Districts, said: "With the coming of soil conservation districts, we approached the erosion problem for the first time in a democratic way."

Homer H. Harris, Sr., president of the Red River Valley Association, told how the aims of his association tied in with those of the soil conservation districts.

Dr. N. A. Woychuk, superintendent of the Bible Memory Association, Inc., at whose camp near Ringgold the meeting was held, compared soil conservationists with the workers of his association. Both are sowing seeds from which good grows, he said.

UNDERWRITES SUBSCRIPTIONS.—A bank in Idabel, Okla., is sending 25 subscriptions to cooperators of the Little River Soil Conservation District this year. A letter went with the first copy of the magazine congratulating the farmers on progress made in conserving soil and water.

KEEPING IN TOUCH.—The board of supervisors of the Comanche County Soil Conservation District in Oklahoma has adopted the policy of mailing to cooperators bulletins and clippings from magazines containing useful conservation information. The purpose is to help speed up the application of the conservation program.

With the material is mailed a letter that contains timely news of district activities. The supervisors find that this policy helps to keep them in closer touch with the cooperators.

SEEDING BY PLANE.—Seeding of native grass by airplane was tried out recently on a half section of a Land Utilization Project near Dalhart, Tex. The area was too rough to seed by ordinary means.

This method of planting native grass seed has been used also in the Grady County, Stephens County, and

South Caddo County Soil Conservation Districts of Oklahoma. It was found there that planes can seed 100 acres per hour.

SPRIG PLANTERS.—Districts in Oklahoma bought 30 Bermuda grass-sprig planters for 1949 spring planting. These tractor-drawn machines can plant 2 to 3 acres per hour. They are equipped with fertilizer attachments.

The sprig planters were designed and developed by SCS technicians and made by machine shops at Chickasha and Tulsa.

SUPPORT FOR SERMON.—The Reverend A. K. Marney of the First Methodist Church in DeLeon, Tex., recently preached his second sermon on the soil and man's obligation to use it properly.

He introduced something new this time. He delivered his sermon with rostrum flanked with field plants that have become important to the local soil conservation program.

Prominently displayed were hairy vetch and Dixie Wonderpeas which have attained popularity as winter cover and soil-improving crops in the Upper Leon Soil Conservation District, as well as elsewhere in the sandy peanut-producing lands of the Cross Timbers. There, too, were green wheat and rye, usually planted with vetch to keep it upright until seed harvest time.

"Pastors must be deeply concerned," the Reverend Marney told his congregation, "when so many of them in the Methodist Church are supplying pastorates that can barely pay their way because the soil about them has been carelessly used. No great civilization can be maintained unless its members give protection to that which God has created."



John O. Simpson, work unit conservationist, places a cluster of Dixie wonderpeas at the chancel as Rev. Mr. Marney looks on approvingly.

NORTHERN GREAT PLAINS

YOU HAVE TO START SOMEWHERE.—Substantial increases in yields from contour farming were the stepping-stones to his desire for a complete conservation plan that includes terraces "and everything," according to William Roberts, who farms east of Gordon, Nebr., with his sons, Jack and Bud. He cooperates with the Cherry County Soil Conservation District.

The Roberts land, near the western edge of Cherry County, includes hardland soils that are farmed and sandy soils and sandhills that are grazed. Contour farming started 3 years ago, the acreage being increased each year until now there are 200 acres on the contour. The moisture conserved showed up in increased yields.

Under the expanded plan, two terraces now have been built with tractor and plow. Intermediate wheatgrass has been seeded as a seed plot. Further development of the sprinkler irrigation system, water-spreading, more planting of alfalfa, grass and trees, and improvement of pastures are other phases on which work is being done. One good thing has led to others.

WEATHERED STORM.—A 23-acre meadow where sagebrush grew just a year before made weathering the January blizzard both easier and much less expensive to Dan Nolan, Lingle, Wyo., a cooperator with the Lingle-Fort Laramie Soil Conservation District.

"The hay this meadow produced," he said, "gave me a good supply of feed even though the 1948 native hay crop was below normal because of the dry season. With hay selling at \$40 a ton, you can get some idea of the worth of that meadow to me."

The meadow is irrigated with flood waters diverted from Rawhide Creek. It was developed as part of Nolan's conservation plan. The water is taken from the diversion dam to the meadow through a canal a mile and a half long.

Little was produced from that land in previous years, Nolan says, but the conservation survey showed it to be suitable to hay production if it were developed and watered. It was leveled and seeded to alfalfa in 1947.

Last year that meadow yielded 3 tons of alfalfa hay per acre. This feed, stacked where it could be distributed to the stock, made Nolan independent of outside feed supplies.

"I had hay when the roads were closed and I needed it," says Nolan. "I didn't lose a cow."

Nolan's conservation plan calls for turning other sagebrush land into hay meadows. This will be done in accordance with the conservation survey that shows what each part of the ranch is capable of. But he hopes not to have to rely on flood waters. He wants to develop a pump-irrigation well.

CONSERVATION AS A CARPENTER.—Extra earnings from conservation farming have already built a good barn for Ross Howen, Tabor, S. Dak., a cooperator with the Scotland Soil Conservation District.

"Gullying and other erosion has been checked, water is saved and the soil has become more mellow," Howen notes. "Crop production has increased fully a third."

Howen's cropland is terraced, contour-farmed, and stubble-mulched. Grassed waterways have been established. Land not suited for cultivation is now in hay and pasture. Dams have been built, and a windbreak planted.

"The soil was hard and tight when I began work on this conservation plan," Howen said. "There was lots of washing, and crops were damaged. Gullies were growing. Yields were relatively low."

"Holding water on the land and getting rid of the excess through grassed waterways checked the erosion. And getting organic matter in the soil by stubble-mulch tillage has made the soil more mellow, so that it can take in water better and is easier to farm."

"The farm is getting better all the time. I've already got enough more income from conservation farming to build a fine new barn."

OUT WHERE THE WINDS BLOW.—Floyd Vaughan of Rolette, N. Dak., signed up with the Rolette County Soil Conservation District and in 1942 began work on his farm conservation plan. His land was damaged by wind erosion and suffering from lack of water. Crop yields were low and feed production scanty.

But a miracle has come through following his farm plan. Vaughan grows most of his crops in wind-strips, uses stubble-mulch tillage, includes grass and alfalfa in his rotation scheme. He has a stockwater dugout and a field windbreak. Another dugout is planned for 1950 and an additional field shelterbelt for this spring.

Vaughan thinks that conservation measures kept him from losing his farm. His crop yields are up over 50 percent. He is getting more organic matter incorporated in the soil. There's hardly any damage from blowing. His livestock has plenty of water. Operations are balanced. Of the windbreaks, Vaughan says, "I wouldn't take \$1,500 for them. Why, this year we got somewhere between 300 and 400 pounds of sancherries and several hundred pounds of plums from the windbreak. We took all we could use, and neighbors gathered a lot more."

WHY WASTE FERTILIZER?—Fred P. Chilen finds that fertilizing sloping land doesn't do much good unless other conservation measures also are used. Chilen farms 291 acres near Miltonvale, Kans., as a cooperator with the Cloud County Soil Conservation District.

Total production increased by 50 percent after Chilen began work on his complete farm conservation plan 8 years ago. On parts of the farm, the gain is much more. "I hauled manure regularly to one 30-acre field for 25 years before I began on the conservation plan, but it didn't do much good," Chilen notes. "Yields stayed low. There were crop wash-outs, stands were thin, and most of the manure went with the soil and runoff. The field was rutted with a lot of little gullies."

"That was the first field I terraced under my farm-conservation plan. It was seeded to alfalfa as part of

the rotation. Then, in 1946 it was planted to wheat and produced twice the former yield. It was in wheat again in 1947 and yields were still higher.

"In the spring of 1948, the field was seeded to certified Norkan sorgo on the contour and it yielded 42 bushels of seed per acre, with the plants growing 8 to 9 feet tall. Just before the crop was up, a 2¼-inch rain fell in half an hour, but it did no damage. Some other farmers I know had to replant. Their crops were late and the yields small."

PACIFIC

1949 CONFERENCE.—The Honey and Pollen Plants Committee of the American Beekeeping Federation will hold its annual meeting at the University of Washington, July 12, 13, 14, and probably 15, 1949.

This conference is for agronomists, soil conservationists, horticulturists, legume- and vegetable-seed producers, range-management specialists, railway agricultural agents, highway and forestry personnel, botanists, pharmacists, wildlife conservationists, beekeepers, extension specialists, and other interested groups. Each group will be represented by a specialist of national standing and a discussion period will follow each address.

There will be a small registration fee to cover expenses.

Inexpensive campus housing will be available, also housing at hotels.

Committee chairman is Dr. S. W. Edgecombe, head, Department of Horticulture, Utah State Agricultural College, Logan, Utah. The program is being prepared by Dr. H. A. Scullen, apiculturist, Oregon State College, Corvallis, Oreg., and Herman F. Menke, apiculturist, Washington State College, Pullman, Wash.


For information address Dr. A. M. Walrath, local arrangements chairman, 590 Olive Way, Seattle 1, Wash.

SCHOOL FRONTIERS.—The public schools of Pullman and Colfax, Wash., in the heart of the famed Palouse section of the Pacific Northwest, are asking soil conservation district supervisors and local farmers to suggest better ways of teaching soil conservation in the elementary grades.

Superintendent Louis Bruno, of Pullman, started the idea when he called together more than 100 farmers, their wives, teachers, district supervisors, businessmen, and professional soil conservationists and told them he wanted "grass roots" advice on how to get soil conservation across to youngsters in grades from first through twelfth. A similar meeting was held at nearby Colfax a few days later.

Out of the meetings came many concrete proposals. Plans were made to incorporate soil conservation in such courses as science, reading, English composition, and geography at all levels of instruction.

A later series of meetings was held with faculty members and technicians of SCS to work out detailed teaching methods.

An aerial photograph showing a large area of land, likely a farm, that has been inundated with floodwater. The water is dark and turbulent, with white foam visible where it flows over the land. A long, straight levee or dike runs diagonally across the middle of the image, separating the flooded area from a calmer body of water on the right. In the foreground, there are several buildings, including a large white structure, and a road. The background shows more land and trees, some of which are also submerged. The overall scene depicts the aftermath of a major flood event.

Adequate measures upstream would have helped to control the wild waters of the Columbia River last summer. Here's what happened to the Max Lyons 1,000-acre beef and turkey farm in Columbia County, Oreg. Fifty thousand turkeys luckily were taken off by barge.

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